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Effect of beet pulp pellets fed steers wintering and finishing rations

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Abstract

Sugar beet by-products are available to cattle feeders in northwestern Kansas, but their value as livestock feed is not known. In 1967-68, steers fed liquid protein concentrate beet pulp pellets (LPC) in wintering rations gained faster (1.96 vs. 1.24 lb. per day) than steers on similar amounts of alfalfa hay. Then on finishing rations, gain per day favored alfalfa-fed cattle (2.58 to 2.25 lb. per day). In 1968-69, there was no significant difference between beet pellets and alfalfa, but 5.0 lb. LPC beet pellets reduced feed consumption and daily gains compared with results from rations involving alfalfa (wintering 1.33 to 1.19 lb. per day; finishing 2.5 to 2.14 lb. per day). Last year, Colby Experiment Station evaluated dried molasses-beet pulp pellets in wintering and finishing rations.

Keywords

Cattlemen's Day, 1971; Report of progress (Kansas State University. Agricultural Experiment Station); 546; Beef; Beet pulp; Steers; Wintering rations; Finishing rations

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Effect of Beet Pulp Pellets Fed Steers Wintering and Finishing Rations

Colby Branch Experiment Station

L. A. Arehart and Evans E. Banbury

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Last year, Colby Experiment Station evaluated dried molasses-beet pulp pellets in wintering and finishing rations.

Wintering Phase

Procedures: Twenty-four steer calves averaging 460 lb. were used to compare dried molasses beet pulp pellets and sorghum grain as energy sources in a wintering ration. Steers (placed on test after a two-week adjustment period) were gradually brought to full feed of sorghum silage and 4.0 lb. of alfalfa hay per day in addition to either 4 lb. of beet pulp pellets or 4 lb. of sorghum grain. Salt, dicalcium phosphate, and ground limestone were provided ad. lib. All steers were implanted with 30 mg. diethylstilbestrol.

The test ran from October 31, 1969, to February 27, 1970 (119 days). Steers were shrunk 16 hours before initial and final weighings.

Results and Discussion: Differences in gain from the two rations were not significant, however, steers consumed more silage when 25% of the sorghum grain was replaced with dried molasses beet pulp pellets (Table 30). The increased silage resulted in greater dry matter intake by steers receiving beet pulp than those receiving sorghum grain (16.4 vs 15.6 lb.). Feed efficiency was slightly better (9.15 vs 9.66 lb.) with sorghum grain rather than molasses beet pulp pellets, so feed cost was $0.51 per 100 lb. gain less with the sorghum grain.

Finishing Phase

Procedure: Dried molasses beet pulp pellets were evaluated as a concentrate in a finishing ration for steers by replacing 25% of the sorghum grain in the ration, as shown in Table 31.

The concentrate portion of the diets provided 11.5% protein. After reaching full feed, steers were hand fed daily to provide feed ad. lib., plus 2 lb. each of alfalfa hay daily. Sorghum silage was fed while the steers adjusted to the high-concentrate ration. Each steer received a 30 mg. diethylstilbestrol implant at the beginning of the finishing phase of 143 days (February 27 - July 20, 1970). Final weights and average daily gains were adjusted to a constant carcass yield of 62%, using carcass data.

Results and Discussion: Steers fed dried molasses beet-pulp pellets for 25% of the sorghum grain in the ration ate nearly 2 lb./day more ration and gained 7.8% faster than those receiving only sorghum grain, so feed efficiency was the same. Dressing percentage, marbling, and carcass grade were not affected.

Summary

This one test suggests that dried molasses beet-pulp pellets can replace 25% of the concentrate without significantly changing average daily gain, feed efficiency, feed intake, or carcass data when fed in cattle finishing rations. Future tests should evaluate using more than 25% dried molasses beet-pulp pellets.

Table 30. Performance of steer calves fed dried molasses beet pulp pellets or sorghum grain as a source of energy in a wintering ration. (October 31, 1969, to February 27, 1970 - 119 days).

Treatment	Sorghum grain	Beet pulp pellets
No. steers	12	12
Initial wt., lb.	461	460
Final wt., lb.	674	651
Av. daily gain, lb.	1.79	1.60
Av. daily ration, lb.	7.5 (23.5)[2]	6.7[1] (19.6)[2]
Forage sorghum silage	3.9	
Sorghum grain		3.9
Dried molasses beet pulp pellets		5.0
Alfalfa hay		15.6
Total (air dry)	16.4	
Feed per 100 lb. gain, lb.		
Forage sorghum silage	423[1] (1315)[2]	415[1] (1217)[2]
Sorghum grain	216	
Dried molasses beet pulp pellets		242
Alfalfa hay	276	309
Total (air dry)	915	966
Feed cost per 100 lb. gain, $[3]	13.30	13.81

[1] Converted to 12% moisture.

[2] As fed - 70% moisture.

[3] Feed costs based on these prices: Forage sorghum silage, $8/ton; sorghum grain, $1.80/cwt.; dried molasses beet pulp pellets, $1.80/cwt; alfalfa hay $30/ton.

Table 31 Effect of Replacing 25% of the Sorghum Grain In a Finishing Ration With Dried Molasses Beet Pulp Pellets (February 27, 1970 to July 20, 1970 - 143 days)

Treatment	100 % sorghum grain		25% beet pellets 75% sorghum grain	
No. steers	12		12	
Initial wt., lbs.	661		664	
Final wt., lbs.[1]	1063		1097	
Avg. daily gain, lbs.[1]	2.81		3.03	
Avg. daily ration, lbs.				
Concentrate mix	19.5		21.3	
Alfalfa hay	2.3		2.3	
Forage sorghum silage	0.6[2]	(1.8)[3]	0.6	(1.8)[3]
Total (air dry)	22.4		24.2	
Feed per 100 lbs.gain, lb.				
Concentrate mix	694		707	
Alfalfa hay	82		76	
Forage sorghum silage	21[2]	(64)[3]	19[2]	(59)[3]
Total (air dry)	797		802	
Feed cost per 100 lbs. gain, $[4]	16.09		16.20	
Carcass data				
Carcass wt., lbs.	659		680	
Dressing percent	62.2		62.8	
Marbling	4.8		4.7	
Carcass grade	18.2		18.4	

[1]Adjusted to a carcass yield of 62% based on hot carcass weight.
[2]Converted to 12% moisture.
[3]As fed - 70% moisture.
[4]Feed cost based on following prices: Ground sorghum grain, $1.85/cwt; dried molasses beet pulp pellets, $1.80/cwt; alfalfa hay, $30.00/ton; soybean oil meal, $5.00/cwt; forage sorghum silage, $8.00/ton.

Table 32. Composition of ration ingredients (%)[1]

Ingredients	Diet 1	Diet 2
Sorghum grain	82.63	61.97
Soybean meal 44%	7.10	7.10
Dried molasses beet pulp pellets	--	20.66
Alfalfa hay	10.27	10.27

[1] Contained 1200 IU Vit. A and 4 mg. aureomycin/1 lb.